The passive system **48** further comprises a slip joint **64** between the fan casing **30** and the abradable seal ring **40**. The slip joint **64** may be located adjacent the leading edge and trailing edge portions **60** and **62** respectively of the seal ring **40** and a wall **70** of the fan casing **30**.

The passive system **48** allows the seal ring **40** to grow different from the fan casing **30** and move thermally independent of the fan casing **30**. As a result, increases in fan efficiencies may be obtained.

There has been provided in accordance with the instant disclosure a blade tip clearance control via z-bands. While the fan blade tip clearance control via z-bands has been described in the context of specific embodiments thereof, other unforeseen alternatives, modifications, and variations may become apparent to those skilled in the art having read the foregoing description. Accordingly, it is intended to embrace those alternatives, modifications, and variations as fall within the broad scope of the appended claims.

What is claimed is:

1. An engine comprising:

a blade;

a casing surrounding said blade;

a seal ring; and

a passive system for connecting said seal ring to said casing and for accommodating thermal expansion of said seal ring relative to said casing so as to maintain blade tip clearance control, wherein said passive system comprises at least one non-corrugated, solid Z-band extending between said casing and said seal ring; and

further comprising a slip joint between a wall of said casing and leading edge and trailing edge portions of said abradable seal ring.

2. The engine of claim **1**, wherein said seal ring is an abradable seal ring.

3. The engine of claim **1**, wherein said passive system comprises a plurality of spaced apart, non-corrugated, solid Z-bands.

4. The engine of claim **1**, wherein said seal ring comprises an annular backing ring and an annular rub strip.

5. The engine of claim **4**, wherein said annular backing ring is formed from aluminum or an aluminum alloy.

6. The engine of claim **4**, wherein said annular rub strip is formed from an abradable material.

7. The engine of claim **1**, wherein each said Z-band has a thickness which minimizes thermal alpha differences between each said Z-band and a material forming the annular backing ring.

8. The engine of claim **7**, wherein said thickness is in a range of from 0.015 inches to 0.030 inches.

9. The engine of claim **1**, wherein each said Z-band is formed from a nickel alloy sheet material.

10. The engine of claim **1**, wherein each said Z-band is formed from a steel sheet material.

11. The engine of claim **1**, wherein said blade is a fan blade and said casing is a fan casing.

12. The engine of claim **1**, wherein said fan blade is formed from an aluminum containing material and said seal ring including an annular backing ring formed from an aluminum containing material.

13. The engine of claim **1**, wherein said passive system comprises a first Z-band joined to a leading edge portion of said seal ring, a second Z-band joined to a trailing edge portion of said seal ring, and a third Z-band intermediate said first and second Z-bands.

14. The engine of claim **1**, wherein said casing is formed from a composite material.

15. The engine of claim **14**, wherein said composite material is an organic matrix composite material.

16. A method for maintaining blade clearance tip control in a fan section of an engine, said method comprising the steps of:

providing a fan casing formed from a composite material and a plurality of fan blades formed from an aluminum containing material;

providing an annular seal ring;

providing a passive system for connecting said seal ring to said casing and for accommodating thermal expansion of said seal ring relative to said casing so as to maintain said blade tip clearance control, wherein said passive system providing step comprises providing at least one non-corrugated, solid Z-band and connecting said at least one Z-band to an inner wall of said fan casing and to said seal ring; and

wherein said passive system providing step comprises providing a slip joint between a wall of said fan casing and leading edge and trailing edge portions of the seal ring.

17. The method according to claim **16**, wherein said annular seal ring providing step comprises providing a seal ring having an annular rub strip formed from an abradable material and an annular backing ring formed from an aluminum containing material.

18. The method according to claim **16**, wherein at least one Z-band providing step comprises providing a plurality of Z-bands and said connecting step comprises connecting each of said Z-bands to said inner wall and to said seal ring.

19. The method according to claim **18**, wherein said connecting step comprises connecting a first one of said Z-bands to a leading edge portion of said seal ring, a second of said Z-bands to a trailing edge portion of the seal ring, and a third one of said Z-bands to a portion of said seal ring intermediate said first and second ones of said Z-bands.

20. The method according to claim **16**, further comprising forming each said Z-band from one of a nickel material, a nickel alloy material, a steel material, a titanium material, an aluminum material, and a composite material.

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